

MAXIMIZING THE CONTRIBUTION OF MINING INDUSTRY TO SUSTAINABLE DEVELOPMENT: CASE STUDY AT PT FREEPORT INDONESIA

Fajar Mulyana and Surna Tjahja Djajadiningrat
School of Business and Management
Institute Teknologi Bandung
Fajar.Mulyana@yahoo.co.id

Abstract— Historically, mining has had a bad reputation of being destructive to the environment and social-cultural. Issues such as the depletion of resources, loss of biodiversity, lack of contribution to the local area's development, human rights violation, and the negative impacts on local communities are central to the mining industry's operations. Despite mining industry claims that comprehensive environmental and corporate social responsibility programs have been fully implemented, the mining industry is still under high pressure to improve its economic, social and environmental performance. PT Freeport Indonesia (PTFI) one of the country's biggest recipients of foreign direct investment is located in the remote area in Papua and interacts with indigenous people. Despite PTFI is one of the largest taxpayers in Indonesia, and contributor of over US\$60 billion to the country's national gross domestic product since 1992, the company is still demanded by stakeholder to contribute more to the local, regional, and national development. The objective of this final project is to analysis the source of the most problem and to define the proper solutions to resolve the problems faced by the mining company especially PTFI in order to be sustainable and to be part of sustainable development. The methodology used in this research project consists of assessment of current business situation started with external and internal environmental scanning, PESTEL analysis is used to study external factors, and then is combined with the SWOT situation analysis.

Keyword: Sustainable Development, Mineral Mining, Root Cause Analysis, PESTEL, SWOT Analysis.

1. Introduction

Mineral and coal mining play an essential role in the national economic development, providing not only materials essential for all sectors of the economy, but also employment, government revenues, and regional development. Contrary to those benefits, mining activity causes negative impact to the social and environmental that requires a more responsible mining practice. Consequently, a sustainable resource management is urgently required to maximize contribution to the stakeholder and to minimize adverse environmental and social impacts. In the minerals mining sector, sustainable development means that investments in minerals projects should be financially profitable, technically appropriate, environmentally sound, and socially responsible. Businesses involved in extracting non-renewable resources have come under mounting pressure to insert the concept of sustainability into strategic decision-making processes and operations.

PTFI provides substantial direct and indirect economic benefits for the central, provincial and local governments, and for the economies of Papua and the Indonesian as a whole.

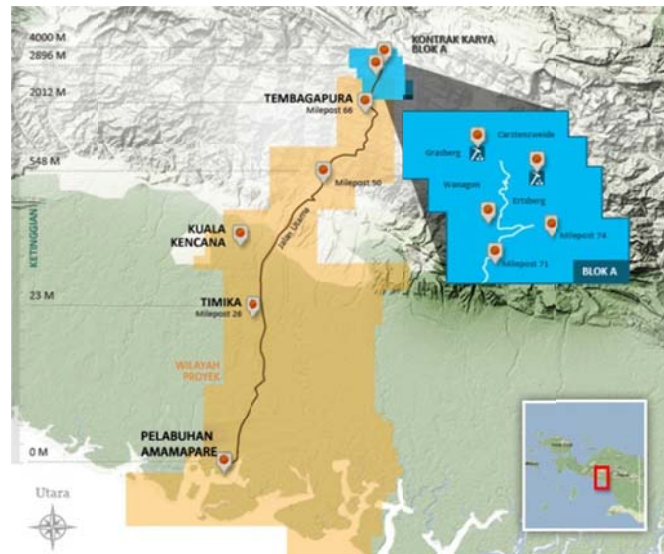


Figure 1. PT Freeport Indonesia COW Area

PTFI continues to provide significant direct financial benefits to Indonesia. Direct benefits are the contribution by a company to the Government of Indonesia (GoI) which includes taxes, royalties, dividends, fees and other direct support. PTFI also provided indirect contributions for Indonesia including infrastructure investments in Papua such as towns, power plants, airports and seaport, roads, bridges, waste disposal facilities, and modern communication systems Social infrastructure provided by the company include schools, dormitories, hospitals and clinics, places of worship, recreational facilities, and small and medium enterprise development.

2. Business Issue Exploration

The objective of this final project is to analysis the source of the most common problem and to define the proper solutions in order to resolve the problems faced by the mining company especially PTFI in order to be sustainable and to be part of sustainable development.

A. Background and Problem Statement

The research project will focus on finding the answer of following question:

What is the root cause of the common problems faced by mining industry in Indonesia in order to contribute toward sustainable development?

How to improve the PTFI's sustainable development program?

B. Conceptual Framework

The goal of mining industry should not on how mining can be sustainable but on how the industry can contribute to sustainable development.

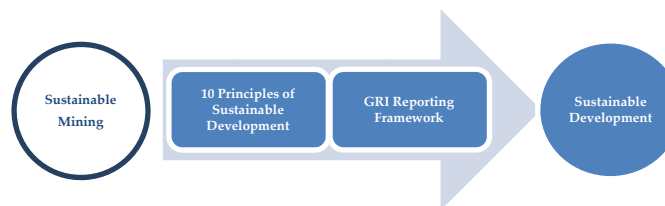


Figure 2. Sustainability Process

The first step of a company can contribute maximally towards sustainable development is the mining company must be sustainable. According to Laurence, Mine managers will be on track in establishing a sustainable mining operation if they then focus on the following five areas: safety, environment, economy, efficiency and the community (Laurence, 2011).

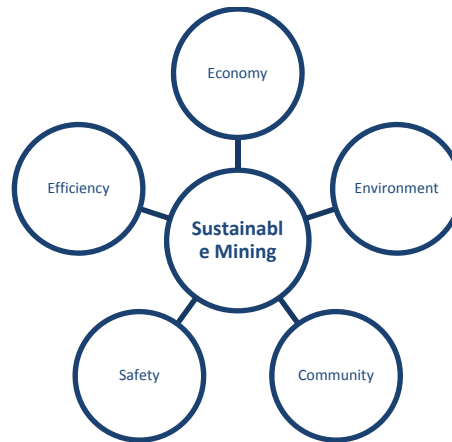


Figure 3. Sustainable Mining Concept

C. Research Scope

The research scope is limited to perform analysis of problem and its root-cause by analyzing the 2011 PT. Freeport Indonesia Sustainable Development Report and its corporate company (Freeport McMoran Inc.) in accordance with the GRI indicators and 10 ICMM's Sustainable Development Principles, to seek alternative solutions to boost PTFI sustainable development implementations, and ultimately will improve PTFI contribution to sustainable development.

D. Method of Data Collection and Analysis

The methods of data collection used in this research included observation, literature survey, discussion, and benchmarking.

- Review on internal and external PTFI Report. Reviews were intensively performed to the PTFI sustainable report namely Laporan Berkarya Menuju Pembangunan Berkelanjutan 2011: Menghubungkan Dunia.
- Observations have been carried out through experiences and cases of current issue.
- Literature surveys have been conducted extensively to find the proper theoretical reference and seek information on the macro environment, social behavior, government policies, and regulations.
- Discussions have been done with individual in charged in the PTFI management, mining association, and stake holders.
- Benchmarking have been used to learn best practice from other similar mining company.

Assessment of current business situation included external and internal environmental scanning. PESTEL analysis is used to analyze external factors then combined with the SWOT internal situation analysis.

- Trends in external environment analysis of minerals and coal mining in Indonesia.
- Analysis of internal environment of PTFI.
- Effectiveness analysis of PTFI's sustainable mining strategies.

The data were analyzed qualitatively under the criteria indicators for sustainability reporting so that the conclusion obtained to mapping the problems, solutions and implementation strategies.

E. Business Situation Analysis

The mining industry is in high pressure to improve its social and environmental performance. Compare to other industrial sectors, the mining industry faces some of the most difficult challenges of any industrial sector. Globally, companies are more expected to meet the highest standards of practices, to provide the best rate of return for shareholders, and to be more transparent third-party audit and stakeholder.

Mineral production has been declining, except for coal and nickel. Mineral production in Indonesia includes, but not limited to, copper, gold, silver, tin metal, nickel, and coal. Of these minerals, gold, silver and copper display negative growth between 2000 and 2011. However, coal and nickel have had significant growth in this period. Analyst believe the fundamentals of the copper business remain positive, supported by the significant role of copper in the global economy, limited supplies from existing mines and the absence of significant new development projects.

In this research, stakeholder interests were identified through analysis of data and information from PTFI and FCX reports, stakeholder seminar results, media, and external audit results.

Stakeholder interest identifications are summarized below:

- Local communities require company will provide employment, infrastructure, and other benefits that counter the risks and impacts they experience and will leave them better off than when the project started (education, health, and business opportunity). Company to respect and support basic rights, even when they are operating where government does not.
- Employees need safety, security, fair treatment, healthy working conditions, and career development consideration when their employment ends.
- Environmental and social organizations/NGO set company to meet a much higher standard of performance (environment, safety, security and human right), corporate governance, cultural heritage, partnership and that the industry will avoid ecologically and culturally sensitive areas.
- Investors demand higher returns and have shown considerable concern about the industry's financial results.
- Consumers will have quality, fair price and safe products produced in a manner that meets acceptable environmental and social standards.
- Government requires companies to comply with legal requirement and applicable regulation, corporate governance and Business Ethics, fair tax and royalty, and work force development.

PESTLE Analysis

Political

- Lack of coordination between the central, provincial and regional governments on mining license and regional development due to regional autonomy.
- More than 10,000 mining licenses, many overlap or are unclearly mapped.
- Government redefine their mining policies through new Mining Law and proposes renegotiating mineral contracts.
- Mining companies are demanded to increase taxes and royalties and also demanded to add more value through building refinery plant.
- Export of raw minerals will be banned in 2014 as per implementation of the new mining law.
- Violations to the anti-corruption law will be critically important to a company's reputation.

Economic

- Taxation issues
- Global economic turmoil
- Volatile commodity prices
- Company's revenue is highly influenced by production output and commodity prices.

Social

- Social license to operate
- Growing poverty and human right issues
- Illegal miner operates in the mining concession area with limited equipment and expertise at operating in dangerous conditions and possible to create significant environmental and social impacts, as well as putting their safety at risk.

Technological

- New mining technology and efficiency require skilled and competence employee.
- New mining technology will reduce manpower need and mining safety risk.

Legal (Mining, Forestry, Environmental, and Energy Laws)

- Some key implementing mining regulations have not yet been issued and there is a lack of clarity in relation to some aspect of already issued regulations (confusion over the implementing regulations for the New Mining Law (4/2009) which replace the predecessor mining Law No 11/1967.
- Overlapping of mining area and forestry area due to conflict between mining operations and forestry regulations.
- Labor regulation/relation

Environmental

- Climate change issue
- Growing environmental awareness

- Energy and water supply
- Mining permits issued by regional or local government, it is potential to the lack of government control and supervision of the environmental protection.
- Artisanal mining equipped with poor environmental management.

SWOT Analysis

The following table shows SWOT analysis result of PTFI current policy and its implementation:

Table 1. SWOT Analysis of PTFI

Strengths	<ul style="list-style-type: none"> - High commitments to build trust - High corporate commitment on sustainability principle commitments - Experienced and well established mining company - PTFI is the significant employer in the such remote area - In affiliated with Freeport McMoran Copper and Gold as market leader in mineral company. - Strong organization culture for safe production - Good human right and principle business conduct practices - New innovative technology implementation - The world's largest single reserve of both copper and gold - Lower production cost among similar producer
Weaknesses	<ul style="list-style-type: none"> - Ineffective integration of sustainability values down into the operational levels of the organization - Unsteady Industrial/labor relation - Sustainable development principles have not been corporate core value. Lack of sustainability awareness both PTFI's employee and Contractor's employee - There is no sustainable development management system in place - Social, economic, and environment programs are not well integrated and all ICMM principles haven't been clearly addressed to the corporate sustainable development policy. - Geographically operate in the very remote area and lack of road infrastructure and extreme weather condition
Opportunities	<ul style="list-style-type: none"> - High demand of copper especially from China and India - PTFI is the significant employer in the such remote area
Threats/Challenges	<ul style="list-style-type: none"> - Volatile commodity prices highly influential to financial results. - Historically, mining has had a bad reputation of being destructive to the environment and social-cultural. - Political uncertainty. Lack of coordination between the central, provincial and regional governments. - Unclear mining and forestry regulation - Climate change issue (availability of water supply) - Insufficient energy supply - Government affairs (corruption and bribery) - Socials issues (artisanal mining, community relation, and human rights) - Environmental issues - Weak government role to facilitate - Security issue, sporadic shootings terror to employees since mid-2009 - Major risks that affect operation directly including natural disasters, safety accidents, unusual weather conditions, wall failures, rock slides or structural collapse in mines.

RCA of PTFI's Sustainable Development Programs

Reflecting the root cause analyses of common problems faced by mining industry as a benchmark toward the macro issues and the SWOT analyses result of existing PTFI's sustainable development efforts, the root cause analysis of PTFI's sustainable development programs weakness summarized as follows:

- PTFI has specified its commitment to the sustainable development into vision and mission, however there are weaknesses on sustainable development organizational structure possibly lead to ineffective integration of sustainability values down into the operational levels of the organization. Unlike PTFI holding company - Freeport-McMoRan Gold and Copper (FCX), PTFI has no sustainable development leadership team that need to be established to help promote and integrate its sustainability commitments into operations.
- There is no vigorous advisory council under PTFI which will provide strategic advice and recommendations to the management on sustainable development issues. The member of the SDAC should come from both internal and external PTFI therefore can accurately determine proper strategy to accommodate sustainable development trend and stakeholder's need.
- PTFI has adopted good corporate strategy on sustainable development through commitments to implement the three elements of the framework which includes commit to 10 principles for sustainable development, commit report its economic, social and environment performances against the 10 principles in accordance with GRI guidelines, and provide third-party verification to ensure PTFI is meeting its commitments to the 10 principles however with vague implementation strategy to some ICMM's principles will result failure implementation. Furthermore, there is no recognized Sustainable Development Management System and Corporate Social Responsibility Management System in place and inconsistent sustainable development training for PTFI employees, and PTFI's contractor employees.
- Major risks that affect operation directly including natural disasters, safety accidents, unusual weather conditions, wall failures, structural collapse in mines.
- Inadequate partnership with government, society, non-government and other stakeholders on sustainable development programs.
- Low level trust of some stakeholders especially media and NGO. The worse sentiment from media and NGO caused by inadequate corporate communication strategy. Other stakeholders demanded PTFI to be more transparency and disclosure.

3. Business Solution

A. Alternative of Business Solution

Through analysis of external and internal environment for general mining companies and PTFI, concept of sustainable mining, ICMM 10 SD principles, GRI reporting framework, alternative business solutions for PTFI is detailed bellows:

- To implement the ICMM 10 sustainable development principles effectively and ensure that the principles can foster company's value.
- To commit reporting its economic, social and environmental performances against the ICMM 10 principles in accordance with GRI Framework, and to provide third-party verification in order to ensure PTFI meets its commitments to the 10 principles and attains transparency and credibility to enhance stakeholder's trust and perceptions.
- To establish organizational structure of a sustainable deployment to coordinate and integrate all sustainable development policies, strategies, and programs.
- To develop Sustainable Development Management System (SDMS).
- To develop CSR Management System in accordance with ISO 26000 and to attain certification to ensure continues improvement on CSR.
- To improve Environmental Management System (EMS) in accordance with ISO 14001.
- To improve Occupational Health and Safety Assessment Series ISO 18001.
- To improve commitment to "A Good Mining Practices", international principles on business ethics and to comply with laws and regulations.
- To continue the endorsement of the Extractive Industries Transparency Initiative (EITI) to disclose payment to governments. With the adoption of the initiative, PTFI must publish what it has been paid and governments must publish what it has been received.

- To manage properly economic development, environmental impact and social responsibilities, and productive relationships must exist between governments, company, and stakeholders (LDSP, 2011)
- To enhance social and economic development by addressing poverty issues.
- To continue respecting the culture and heritage of local communities, including indigenous peoples.
- To enhance and nurture constructive communication strategy to deliver PTFI's effort on sustainable development.
- To seek initiative to beyond compliance efforts such as energy conservation, resources conservation, biodiversity, and other green mining initiatives.
- To leverage constructive engagement of employees on matters of mutual concern.

B. Analysis of Business Solution

Analyses of business solution to enhance PTFI's Sustainable Development Program can be down-streamed to following business solutions:

- Establishing Sustainable Development Organizational Structure. The Leadership team will develop sustainable development management system (SDMS), create corporate sustainable development value, and translate 10 ICMM Principle and GRI Reporting framework into PTFI operation practices.
- Reactivating Sustainable Development Advisory Council (SDAC). SDAC will provide strategic advice and recommendations to the EVP-SD on sustainable development emerging issues and challenges.
- Seeking initiative to improve partnership with central government, local government, society and other stake holder on sustainable development.

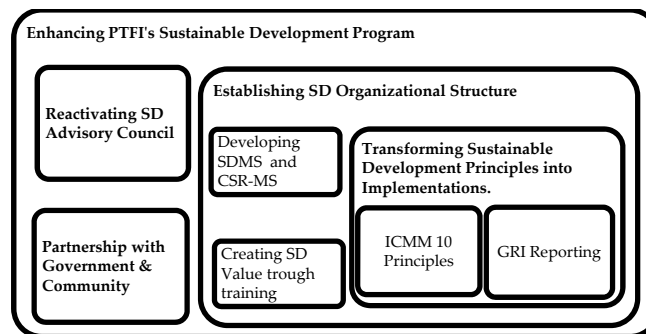


Figure 4 PTFI Business Solution Framework

4. Conclusion and Implementation

A. Conclusion

- The main phase to the mining companies can contribute to sustainable development is the company must be a sustainable mining company, therefore the copper and gold mining company should be financially profitable, technically feasible, environmentally sound and socially responsible.
- ICMM 10 sustainable development principles is a good business level strategy for mining industry to boost contribution to sustainable development and should resolve many problems and challenges related with economic contribution, environmental and social.
- Sustainable development principles have been in well-established and well-implemented at the holding company level (Freeport-McMoRan Copper & Gold Inc.) however it is insufficiency of implementation at the PT Freeport Indonesia operations.
- Sustainable development principles have been integrated into company policies but not all principles have been transformed into implementations. The principle must be also adopted by PTFI's business partners and suppliers of goods and services. Plan, design, operate, and close operations in a manner that enhances sustainable development. PTFI Mission and Vision of sustainable development need down to operational level and become value for all organizational level through a Sustainable Development Management System (SDMS), organizational control and measured training programs.
- SDMS implementation needs to be strengthened by the establishment of a sustainable development division to coordinate and integrate all policies, strategies, and programs that are currently carried out separately by the

environment, safety and health, community development, and CSR Departments. Centralized organizational structure is required in order to the effectiveness of SD programs.

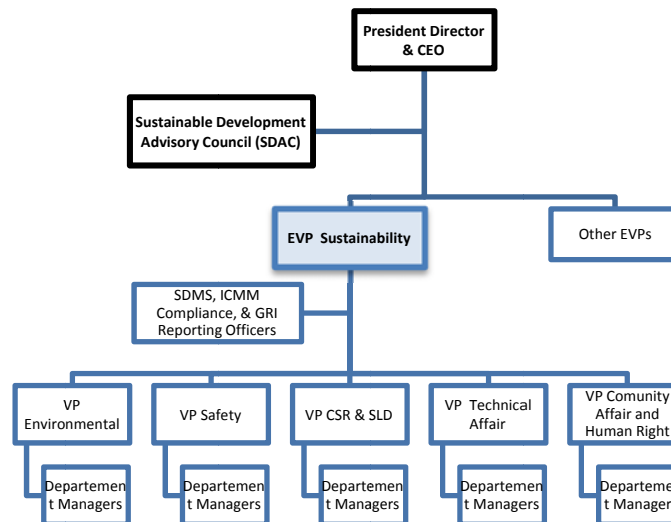
- Government role and community participation on sustainable development program is key success factors of the SD implementation. This conclusion supported by the results of studies involving hundreds of companies that determined CSR performance is not optimal due to low institutional capacity, low community participation and weak state creates an enabling environment to support the CSR program.
- Absence of consultation with stakeholders and other affected parties in the identification, assessment and management of all significant social, health, safety, environmental and economic impacts associated with company activities for several years contribute to constrain company sustainable development implementation.
- Major risks that affect operation directly including natural disasters, safety accidents, unusual weather conditions, wall failures, rock slides or structural collapse in mines need to be scrutinized and well managed. Fail to address this risk will disrupt the sustainability of company operation's.

B. Implementation Plan

Based on analyses the implementation plan for business solution recommendations will be divided several stages as follow:

- Stage 1: Establish a sustainable development organization, re-activate a Sustainable Development Advisory Council (SDAC), and implement ICMM principle for all operational level through GRI indicators as success criteria. Develop Corporate Social Responsibility Management System (CSR-MS) in accordance with ISO 26000 and seek a CSR certification from an international certification body. Along with the development of CSR-MS, comprehensive training programs on the CSR and sustainable development (SD) must be conducted and effectiveness of training should be reviewed to ensure the CSR & SD will be part of PTFI's value.
- Stage 2: Establish a Sustainable Development Management System (SDMS) and set sustainable development training to ensure adequate competency at all levels among PTFI and contractors. Plan, design, operate, and close operations in a manner that enhances sustainable development therefore and to be part of PTFI'S competitive advantage and core value.
- Stage 3: Encourage PTFI's business partners and suppliers of goods and services to adopt and implement The 10 SD principles.
- Stage 4: Facilitated regular consultation session with stakeholder and other affected parties to identify, to review and to manage all significant social, health, safety, environmental and economic impacts associated with company activities.

In reference to the recommendation, a key entry for maximizing contribution toward sustainable development is organizational structure change. The proposed sustainable development organization will modify and centralize existing organization by merging Chief Strategic Officer and Chief Community Officer to become one EVP, named EVP and Chief Sustainable Development Officer (EVP-SD). VP of Environmental and VP of safety should be shifted under the new EVP-SD. In term of efficiency and organizational effectiveness, VP Social & Local Development (SLD) is possible to be merged with VP of CSR as VP CSR-SLD. In addition to the organizational structure change, Sustainable Development Advisory Council (SDAC) should be reactivated. SDAC will provide strategic advice and recommendations to the EVP-SD on sustainable development emerging issues and challenges. The member of the SDAC should come from both internal and external PTFI. SDAC need to be led by high level professional while its member will involve senior staff from corporate office (FCX), EVP and General Manager of PTFI, professionals, community leaders, academia, NGO, and others stakeholders. SDAC is recommended to have quarterly meetings or less if required.



At corporate level, three roles are key to sustainable development management: The CEO, the SDAC, and the EVP Sustainability. Among other responsibilities, the EVP Sustainability supports divisional heads (VP) on sustainability matters and the enlargement of sustainable development values and culture. In the proposed organizational structure, EVP-SD will be responsible for overseeing the vice presidents of Environmental, CSR-SLD, safety, corporate communication and technical affairs on sustainable development programs. The EVP will examine key performance, govern day-to-day and sustainable development activities and consolidate all divisions' activity that contribute to the goals and targets of sustainable development. In daily operations, the EVP of Sustainability will be assisted by SDMS, ICMM Compliance, & GRI Reporting Officers.

At the divisional level, the Division's VP plays a key role in the efficient integration of sustainable development standards, the implementation of SD management systems and SD performance evaluation and reporting.

References

- Australian Government Department of Resources, Energy & Tourism, 2011, A Guide To Leading Practice Sustainable Development In Mining(LDSP).
- Buxton, A, 2012, MMSD+10: Reflecting on a decade, IIE D Discussion Paper. International Institute for Environment and Development, London
- Clarissa Lins and Elizabeth Horwitz, 2007, Sustainability in The Mining Sector. Fundação Brasileira para o Desenvolvimento Sustentável, Rio de Janeiro - RJ - Brasil
- David Laurence, 2010, establishing a Sustainable Mining Operation: an overview, Journal of Cleaner Production.
- Fraser Institute, 2013, Global Mining Survey Results for 2012/2013 reveals shift in Canada's top-ranked jurisdictions. Available from www.fraserinstitute.org [Accessed on 11 May 2013].
- Freeport McMoRan Copper & Gold Inc, 2013, Annual Report 2012: Expanding Resources.
- Freeport McMoRan Copper & Gold Inc, 2013, Annual Report 2012 Form 10-K.
- Global Reporting Initiative (GRI), 2013, Available from <https://www.globalreporting.org/information/about-gri/what-is-GRI/Pages/default.aspx> [Accessed on 18 May 2013]
- Ireland, Hoskisson, and Hit, 2011, The Management of Strategy Concepts and Case, 9th En, South-Western Cengage Learning, Canada
- International Institute for Environment and Development (IIED), 2002, The Mining, Minerals and Sustainable Development Project.
- International Council on Mining and Metals (ICMM), 2012, Mining's Contribution to Sustainable Development: an Overview.
- International Council on Mining and Metals (ICMM), 2012, The Role of Mining in National Economies
- ICMM, 2003, Sustainable Development Framework, Available from <http://www.icmm.com/our-work/sustainable-development-framework/10-principles>, [accessed on 10 March 2013]

- José A. Botín and Miguel Palacios, 2010, Sustainable management: a strategic challenge for a global minerals and metals industry, Proceedings of Copper 2010.
- Laurence, D.C., 2011, "Establishing a Sustainable Mining Operation: An Overview, Journal of Cleaner Production Vol. 19, Issue 2-3, Jan/Feb 2011 Elsevier Science Ltd.
- Peter Newell & Jędrzej George Frynas, 2007, Beyond CSR? Business, poverty and social justice: an introduction, Third World Quarterly, 28:4, 669 – 681
- PT Freeport Indonesia, n.d., Economic Impact, Available from http://www.fcx.com/envir/econ_indo.html, [Accessed on 3 March 2013]
- PT Freeport Indonesia, 2012, Laporan Berkarya Menuju Pembangunan Berkelanjutan 2011: Menghubungkan Dunia,
- PT Freeport Indonesia, (2012), Tour Companion 2009, PTFI
- Pricewaterhouse Coopers (PWC), 2012, Mining in Indonesia Investment and Tax Guide.
- United Nations, 1987, Report of the World Commission on Environment and Development: Our Common Future, Available from: <http://www.un-documents.net/our-common-future.pdf>, [Accessed on 13 April 2013]